10th Southern African Fire Network (SAFNet) Meeting

15th - 19th April 2018

Venue: Skukuza, Kruger National Park, South Africa

Collaborative fire information, resource sharing, training and research in support of integrated fire management in Southern African countries: Science in Action

Report prepared by Navashni Govender & Anja Hoffmann

ACKNOWLEDGMENTS

The major funders for this meeting was START (System for Analysis, Research and Training) and the Joint Research Centre (JRC) are gratefully acknowledged.

We are thankful for the assistance provided by the GOFC-GOLD proposal team in sourcing START support and the role played by Sarah Schweizer and her team at START in approving and facilitating access to the funds. All flight arrangements were done by Chris van Dyke from EWA Travel in Washington DC.

The Kruger National Park is acknowledged for the in-kind support of free entry to the KNP for all delegates, access to subsidized accommodation and the venue of the meeting.

Finally I would like to thank Anja Hoffmann for her continued support and all her inputs (academic, logistical, meeting co-ordination and lots more that she did) to ensure the success and productivity of the meeting.

EXECUTIVE SUMMARY

The Southern Africa Fire Network (SAFNet) held its tenth meeting in Skukuza at the Kruger National Park, South Africa from the 15-19th April 2018. The overall theme of the meeting was "Collaborative fire information, resource sharing, training and research in support of integrated fire management in Southern African countries: Science in Action". The workshop was attended by 27 delegates representing 12 countries (Germany, Madagascar, Malawi, Mozambique, Netherlands, South Africa, Swaziland, Tanzania, USA, UK and Zimbabwe).

The meetings main aim was to update and rejuvenate the networks activities, thereby making SAFNet again a visible and lively network in the region. The overall objectives of the meeting were (1) To exchange and foster cooperation and collaboration on national and international fire research and science to improve national and regional fire and natural resource management strategies; (2) To Increase Awareness and Application of Global and Regional Wildfire Information Systems and (3) To improve fire science capacity building and application of science results into practice.

The 3 day meeting comprised of presentations, a participatory group work session and a field trip to the application of a fire treatment on the long term fire experiment in the KNP, with the key outcomes anticipated were (1) Revival, renewal and reactivating of the SAFNet community, (2) Updated website for the Network, (3) Establishment of joint regional and international fire science projects, with possible validation sites and (4) Exposure to the state of the art of methodologies on how to calculate fire emissions, available satellite-based fire monitoring products, biomass estimates for fuel monitoring with application of the various technologies and methods.

This meeting has been instrumental is really generating the will, enthusiasm and drive from the countries present that want to revive the Network and sustain SAFNet as a fire resource for the region. We have elected two additional members to our steering committee in order to stimulate new ideas. It is also recognised that although a voluntary Network SAFNet has played a vital role in fire management, improving fire technologies and polices and acted as a validation stream from remote sensing products. So the following initiatives has really worked in the Networks favour in ensuring our persistence, namely, David Roy's MODIS validation project (kick started the Network), Philip Frost and AFIS and EU MESA project and the "Glue" funding that we receive from START and GOFC-GOLD. However, what did not work and where we need to drastically improve is (1) Maintaining active country focal points and (2) Communication, within the group and to outside people. These are points that we will be aiming to improve in due course.

ABBREVIATIONS AND ACRONYMS

AFIS	Advanced Fire Information System
CSIR	Council for Scientific and Industrial Research (South Africa)
FRP	Fire Radiative Power
GOFC –GOLD	Global Observation of Forest and Land Cover Dynamics
GOFC IT	GOFC Implementation Team
GWIFS	Global Wildfire Information System
IFM	Integrated Fire Management
JRC	Joint Research Center
KNP	Kruger National Park
MODIS	Moderate Resolution Imaging Spectroradiometer
MESA	Monitoring of Environment and Security in Africa
NASA	National Aeronautics and Space Administration
NNR	Niassa National Reserve
SAFNET	Southern African Fire Network
SADC	Southern African Development Community
START	Global Change **Sys**T**em** for **A**nalysis, **R**esearch and **T**raining
RS	Remote Sensing
RSA	Republic of South Africa
UK	United Kingdom
USA	United States of America
WITS	Witwatersrand University

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1 Introduction

The Southern Africa Fire Network (SAFNet) held its tenth meeting in Skukuza at the Kruger National Park, South Africa from the 15-19th April 2018. The overall theme of the meeting was "Collaborative fire information, resource sharing, training and research in support of integrated fire management in Southern African countries: Science in Action" (see Appendix I – Workshop Program).

The workshop was attended by 27 delegates representing 12 countries (Germany, Madagascar, Malawi, Mozambique, Netherlands, South Africa, Swaziland, Tanzania, USA, UK and Zimbabwe). (Appendix II – Attendance List).

The 3 day meeting comprised of presentations, a participatory group work session and a field trip to the application of a fire treatment on the long term fire experiment in the KNP.
The welcoming remarks, introduction of delegates and the opening of the meeting were undertaken by Ms Govender. Mr Dlamini, Steering committee member for SAFNet thanked the delegates for attending the meeting and for be part of the revival of SAFNet. The opening session was closed by a background and information presentation on and overview of GOFC-GOLD by David Roy.

1.1 Background GOFC- GOLD and SAFNET

Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD) is a coordinated international effort working to provide ongoing space-based and in-situ observations of forests and other vegetation cover, for the sustainable management of terrestrial resources and to obtain an accurate, reliable, quantitative understanding of the terrestrial carbon budget. GOFC/GOLD is operating under the Global Terrestrial Observing System (GTOS) program, which is sponsored by the Integrated Global Observing Strategy (IGOS). The main goal of GOFC/GOLD is to provide a forum for international information exchange, observation and data coordination, and a framework for establishing the necessary long-term monitoring systems. Potential users of GOFC-GOLD products include global change researchers, international agencies, national governments, non-governmental organizations, and international treaties and conventions (such as the Framework Convention on Climate Change). One of the most important challenges facing GOFC-GOLD is to develop methods and implement systems that provide both research and operational information on a regular sustained basis.

The GOFC/GOLD-Fire Mapping and Monitoring Theme is one of the two major themes (land cover) aimed at refining and articulating the international observation requirements and making the best possible use of fire products from the existing and future satellite observing systems, for fire management, policy decision-making and global change research. GOFC/GOLD is promoting self-organized regional networks of data users, data brokers and providers, where closer linkages and collaborations are established with emphasis on an improved understanding of user requirements and product quality. GOFC/GOLD-Fire is pursuing, in a joint effort with the Committee on Earth Observing Satellites (CEOS) Working Group on Calibration and Validation (WGCV) Land Product Validation (LPV) subgroup, the coordinated validation of fire products by standardized protocols.

1.2 GOFC Regional Networks- SAFNET

To execute and design projects, develop consensus algorithms and methodologies for fire product generation and validation, the GOFC-GOLD Fire Implementation team works with GOFC-GOLD Regional Networks in Eurasia, Asia, Africa, South and Latin America to bring together fire data providers, users and researchers operating in (or with an interest in) a common geographic area, and represents a link between national agencies, user groups and the global user/producer. The **Southern African Fire Network** is one of the global regional networks that foster collaborative efforts in fire monitoring and management in southern Africa. SAFNet's goal is to achieve more effective and appropriate fire management policies and practices in southern

Africa through the use of remote sensing and other geospatial information technology. SAFNet's purpose is to enhance the use of information from field observations and remote sensing of fires for natural resource management in southern Africa.

SAFNet is using small seed funding grants from System for Analysis, Research and Training (START) to conduct on a biannual basis regional network meetings to engage the fire user and management community to address regional and national concerns and issues, to provide a voice for regional and national needs and to foster lateral transfer of technology and methods concerning fire science and management within and between countries. The regular meetings aim further to bring together both the fire science and the practitioner community from the various SADC countries to foster future cooperation and advance dialogue in order to (i) highlight good practice examples, (ii) identify knowledge gaps and needs of both communities, and (iii) join forces and mutually support each regional fire management efforts. The network meetings are being held on a rotational basis in the various SADC countries since 2000, with the last meeting being held in 2013 in Tanzania.

1.3 Aim, Objectives and Outcome of the 10th SAFNet meeting

This meetings main aim was to update and rejuvenate the networks activities, thereby making SAFNet again a visible and lively network in the region.

The overall objectives were to:

- To exchange and foster cooperation and collaboration on national and international fire research and science to improve national and regional fire and natural resource management strategies
- To Increase Awareness and Application of Global and Regional Wildfire Information Systems
- To improve fire science capacity building and application of science results into practice

The key outcomes anticipated were:

- Revival, renewal and reactivating of the SAFNet community
- Updated website for the Network
- Establishment of joint regional and international fire science projects, with possible validation sites
- Exposure to the state of the art of methodologies on how to calculate fire emissions, available satellite-based fire monitoring products, biomass estimates for fuel monitoring with application of the various technologies and methods.

2 Session 1&4 – Fire research and project in the SAFNet region

All presentations from this meeting are posted on the SAFNet website: http://afis.meraka.org.za/safnet.

Presentations were given by regional country focal contacts.

Philip Frost (RSA, CSIR) gave an overview of MESA and Fire Risk Modeling. He highlighted that there is a need for better representation from Universities in the region and that SAFNet can facilitate this interaction. The South African Nano-satellite and its application and launch was presented and how SAFNet can play a role in validation for the Nano-satellite. **Linda Kleyn (RSA, CSIR)** highlighted the new AFIS developments. **Kekilia Kabalimu (Tanzania)** presented the use of Earth Observation data for WildFire Monitoring in Tanzania. **Wisdom Dlamini (Swaziland)** gave and overview of fire management in Swaziland (16years). His presentation noted that there are areas that government would like to reduce fires but also encourage fires in the areas that have not burnt (reduce bush thickening and invasive species) for range land management purposed. Government is now actively promoting the use of fires and this is due to the fire information that SAFNet has provided, hence it has been positive to promote the use of fires in Swaziland. **Ntandokamlimu Nondo (Zimbabwe**) presented on the use of Earth Observation Technologies in Fire Management in Zimbabwe. **Aniceto Chauque (Mozambique)** presented on the past and on-going Research in Niassa National Reserve (NNR). **Ruttia Katiyi (Malawi)** looked at the fire monitoring that is done in Malawi and stated that there was no fire monitoring prior to establihement of MESA in 2013. We were very fortunate to have for the first time representation at the SAFNet meeting from Madagascar, with **Mamisoa Andrianjafy**, from the Missouri Botanical Garden in Madagascar outlining the fire requirements for his country. This was an excellent presentation to expose the delegates to fire regimes on the Island. **Sally Archibald (South Africa , WITS)** looked at fire modelling: Inter-comparison and gave the following conclusions (1) as rainfall decreases pyrodiversity increases, (2) more variable fire regimes more bird diversity and (3) in wet areas, birds and animals response to pyrodiveristy. **Talfryn Harris (South Africa, WITS),** presented on fuel curing and fire behaviour on a Highveld grassland. Finally **Judith Kamoto (Malawi),** gave feedback on the status of the Miombo Network and possible collaboration with our sister network. **Robin Beatty (Mozambique)** presented a very practical and applied talk on Restoring Traditional Fire Management. How to get the Science into Action and what end users can do to inform the remote sensing community of our needs and requirements. This is what SAFNet should do. A collective voice from the region to NASA.

3 Session 2 – Reviving the network: Break out group work

Delegates were divided in four (4) groups with approximately 5 to 8 per group. Each group was asked to select a person to facilitate the discussion, a person to take notes and write and a person to report back to the meeting. Four questions (below) were posed to the groups.

Questions:

1. What quick, easy interventions could we do to revive the network and improve communication?
2. What regional activities/research questions do you know of related to fire?
3. Could any of these be turned into network-wide projects run by SAFNET?
4. Going forward – Would you prefer the Network to the institutionalised or voluntary?

Detailed responses from the Groups is listed in Appendix 3.

Summary points for each questions is outlined below:

- Q 1
  - Website improved – GOFC GOLD
  - Possible journal articles:
  - SAFnet journal article
  - "Africa fire assessment"
  - "Best practices for using earth observation data for fire monitoring/management in S Africa"
- Q2
  - Good fire vs bad fire (i.e. inform fire practices)
  - Are southern African fire regimes changing (meaningful baselines)
  - Fire extinction modelling
  - Fuel load fuel moisture characterisation,
  - Citizen science
- Q3
  - Changing fire regimes
- Q4
  - (Seek SADC recognition). NGO requires constant funding, not sustainable

What worked	What didn't work?
David Roy MODIS validation	Maintaining active country focal points
Philip Frost and AFIS and EU MESA	Communication – within the group and to outside people
Themed meetings (eg like in Morogoro)	
Glue funding…. START GOFC-GOLD	

Projects to involve citizen science can assist the Network

- On the ground photos of fuel moisture
- Active fire detection…(agricultural fires, fire plumes)
- Fuel loads
- Aerosol characterization
- Something more focused linked with SAFNET….links to schools
- Need to incentivize people to do it and do quality control

4 Session 3 – International fire research and projects

The international fire researchers gave presentation on the following topics and all presentations will be made available on the SAFNet website.

Mata Yebra (Australia) - Global validation of Live Fuel Moisture Content (FMC) products from satellite MODIS

Tomás Artes (Joint Research Centre, Italy) - Status and progress on the implementation of the Global Wildfire Information System (GWIS). There was some discussion pertaining to GWIS and their function, namely, it is a hub for outreach outside the traditional and not technical user community. SAFNet to produce a one pager on what and how the remote sensed fire data is being used in Africa. Philip does download all the data and therefore we can provide this for each of the countries.

Martin Wooster (UK, Kings College) - Fire Emissions

David Roy (USA) - Landsat-8 Sentinel-2 burned area mapping

Luigi Boschetti (USA) - The MODIS collection 6 burned area product: status and validation

Ronald Vernooij (Netherland) - Monitoring fire behaviour and fire emissions from space with a multi-sensor approach

Gernot Ruecker (Germany, Zebris) - Monitoring fire behaviour and fire emissions from space with a multi-sensor approach

Gareth Robert (USA) - FRP-derived fuel consumption and its relationship with vegetation productivity

5 Network Administration

Chenay Simms (South Afrca, SANParks) gave the SAFNet report back on the GOFC-GOLD Regional Networks Summit, Tbilisi, Georgia, 13-16th September 2017. She made the following comments: That there were similarities and differences across the networks. Some networks focus on training and skills development whilst others had a fire and landcover focus. Therefore, we should link with Miombo. She also recognised that SAFNet needs to be more active in the region and those countries can learn from each other. Networks should also go out and get their own funding.

Renewing SAFNET and network activities

(1) Need to increase exposure of SAFNet
- Summary of current trends in remote sensing of fire – for African users.
- Research paper/s
- Present at the IURFO special session (Miombo network)
- Letter of introduction/newsletter about SAFNet activities
- Summary of achievements of SAFNet.
  - How has SAFNet made a difference in each of the countires (positive or negative)
  - Each country reports on activities/policy/research that was enabled by SAFNet. Earth Observer newsletter?

(2) Need to increase communication/participation within the Network
- Update the email/contact list
- Establish new country focal points
- Each country focal points has to recruits two others members
- Annual reports from each country (half page)
- Active webpage and or other social networking

(3) For the next meeting
- Get funding from GWIS with the promise that we will have a workshop/questionnaire about user needs and uptake of GWIS products
- Actually use the meeting for some of the other activities we highlighted
  - Eg: database/network of sites in Africa that are applying experimental fires.
  - Eg: Developing or validating a fuel model for Africa
  - Eg: plans for calibration of combustion completeness
- Invite SASSCAL representative to this meeting. Also Miombo Network participation.
- Invite paleo-fire working group member.

(4) Research activities that require regional sampling
- Fire emissions over the season
- Paleo-ecology of African fires
- Fire MIP – fire modelling. What makes fires go out?
- Validation of new fire products
- Agricultural fire mapping - crowd sourcing.
- Small fire mapping.
- Trouble-shooting fire radiative power measurements?
- Database of controlled fire applications for use by other researchers.

(5) Funding options
- GWIS

- Newton Grant
- START
- Philip to access GWIS funding to get all the networks to meet.

Website

The website will still be hosted by Meraka but **Chenay Simms** has taken up the challenge to update the website with the assistance from the steering committee and members.

Steering committee

1. Navashni Govender – South Africa – Navashni.govender@sanparks.org
2. Philip Frost – South Africa - PFROST@csir.co.za
3. Wisdom Dlamini – Swaziland - mwdlamini@gmail.com
4. Judith Kamoto – Malawa - judithkamoto@gmail.com
5. Ntandokamlimu Nondo - Zimbabwe - ntando.nondo@gmail.com

6 Evaluation of Meeting

A questionnaire (Appendix IV) was given to all delegates to briefly evaluate the meeting and assist the organizers in receiving comments to improve for future meetings. Below are the results from the questionnaires received.

Q1: Comment on the content of the meeting and provide suggestions to improve the next meeting?

The content of the meeting was ranked from Good to Excellent. Suggestion was that additional time should be made available so that methodologies of research conducted can be elaborated. Remote sensing focus and should invite more fire implementers or managers. Would like to see summaries on the SAFNet website. Next meeting to have a training component included.

Q2: What topics should be emphasized at the next meeting?

1. Different fire research that is on-going in the region
2. Good fires vs Bad fires
3. Traditional fire management systems
4. Hand on training – mangers on satellite derived products
5. Fire knowledge and skills transfer between academics and fire managers
6. Enhancing research capacity in the region
7. Use of satellites for small fire detections

Q3: Was the content of the workshop useful to you and how?

All respondents said that the meeting was very useful and gave the following reasons:

1. Exposure to new fire research, results and fire monitoring taking place
2. Was good to hear from the “horse’s mouth” about the latest of algorithms development
3. Noted the different fire measuring equipment that is available and the techniques.
4. Access to resources and information
5. Sharing ideas within and across the region

Q4: What is the one take home message from the meeting that you have noted?

1. The need for improved fire management
2. Importance of fire research
3. The network needs to be active to gain the benefits of a Network
4. Communication of information is crucial
5. Importance of emissions data from Africa feeding into Global climate models
6. Big and small fires are important for the benefits of communities. Need to be able to map and monitor the small fires.

Q5: Comment on the structure of the workshop (debate/group work/presentations)? Which format was most useful to you and why?

Presentations X 3

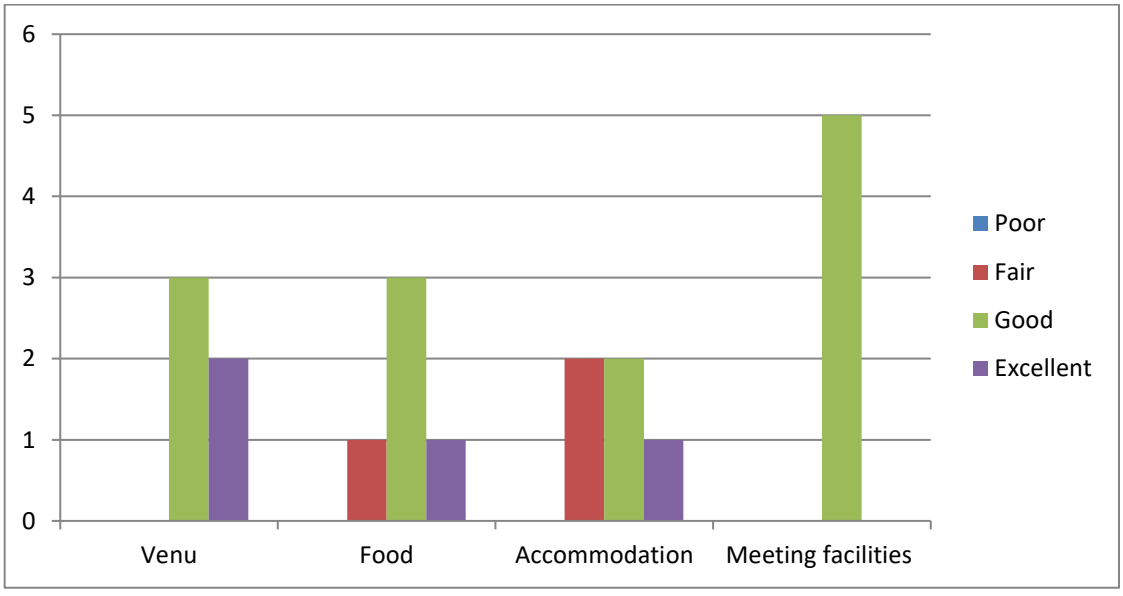
Group work X 1

A bit of everything X 2

Q6: How would YOU and your country like to be involved in the Network?

1. More research
2. Validation of protocols
3. Share fire management plans
4. Technical support wit latest technologies
5. Training
6. Meetings
7. Capacity building

Q8: Rate the following aspects of the meeting?



We will certainly try to improve on the logistics for the next meeting.

7 Field trip – Fire application and the Long term EBP's

Fire research began formally in the Kruger National Park with the establishment in 1954 of an experiment to test the effects of fire on the vegetation. The original aim and singular objective of the experiment was to study the effects of fire on the vegetation of the Kruger National Park under the grazing pressure of indigenous herbivores. The experiment consisted of the application

of fires at varying return intervals and seasons, and protection from fire, on a series of 7 ha plots in four of the major vegetation types (Sourveld, Combretum, Knobthorn- Marula and Mopane vegetation types) of the Kruger National Park (Figure 1). The experiment was open to grazing and browsing by a diverse suite of herbivores, and this may have mediated or masked the effects of fire. The treatments originally included annual winter fires in August and biennial and triennial fires in August, October, December, February and April. In 1976, further treatments to examine the effects of fires every 4 and 6 years in October were added to the experiment (Biggs, et al. 2003).

The specific objectives to link the work done by the international researchers and SAFNet were to:

- To apply experimental prescribed fires; and coordinate with satellite overpass by using online tools to project satellite orbit and observation conditions during days of burning;
- To use the on ground data from the burn plot to validate and support the detailed quantitative satellite measurements or fuel load (biomass), background, and atmospheric factors to consider;
- To determine minimum detectable fires by satellite: varying size & temperature conditions (April or cool fire);
- To determine the emission ranges in savanna fires and
- To bring together fire data providers, users and international and regional researchers.

Appendix 1

Meeting Program

Travel to and Arrival at Skukuza KNP Sunday 15th April 2018	
Dinner at the Skukuza restaurant at 18h00	
Day 1: Monday 16th April	
Opening Session: 10th SAFNet Meeting	
07:00 - 08:15	Breakfast at Skukuza restaurant
08:30 - 09:00	Registration at the Game Capture Auditorium
9:00-10:30	• A word of Thanks from SAFNET **Wisdom Dlamini - Swaziland**
	• Objectives, Agenda and Housekeeping of the Meeting **Navashni Govender – RSA, SANParks** • Overview and latest News on GOFC-GOLD Fire **Martin Wooster/ David Roy** • SAFNet report back on the GOFC-GOLD Regional Networks Summit, Tbilisi, Georgia, 13-16th September 2017 **Chenay Simms – RSA, SANParks**
10:30 - 11:00	Tea/Coffee Break

Session 1: Fire Research and Projects in the SAFNET Region	
11:00 -13:00	• Overview of MESA and Fire Risk Modelling **Philip Frost – RSA, CSIR** • New AFIS developments **Linda Kleyn – RSA, CSIR**
	• Global validation of Live Fuel Moisture Content (FMC) products from satellite MODIS **Mata Yebra –Australia** • Use of Earth Observation data for WildFire Monitoring in Tanzania **Tanzania - Kekilia Kabalimu**
13:00 – 14:00	Lunch
Session 2: Reviving the Network: Breakout Group work	
14:00– 15:00	• **Questions:**
15:30 – 16:00	Tea/Coffee Break
Feedback from breakout group work	
18:00	Dinner at Skukuza restaurant

Day 2: Tuesday 17th April	
7:00 – 8:15 – Breakfast at the Skukuza Restaurant	
Session 3: International Fire Research and Projects	
8:30 - 10:30	• Status and progress on the implementation of the Global Wildfire Information System (GWIS) **Tomás Artes – Joint Research Centre, Italy** • Fire Emissions **Martin Wooster – UK, Kings College** • Landsat-8 Sentinel-2 burned area mapping **David Roy** • The MODIS collection 6 burned area product: status and validation L**uigi Boschetti** • Past and On-going Research in NNR **Aniceto Chauque** • Monitoring fire behaviour and fire emissions from space with a multi-sensor approach **Ronald Vernooij**

10:30 - 11:00	Tea/Coffee Break
11:00 – 12:45	• Ibity Massif, Madagascar: what is the ideal fire regime for biodiversity conservation **Mamisoa Andrianjafy** • Monitoring fire behaviour and fire emissions from space with a multi-sensor approach **Gernot Ruecker- Germany, Zebris** • FRP-derived fuel consumption and its relationship with vegetation productivity **Gareth Robert** Restoring Traditional Fire Management
13:00 – 14:00	Lunch
Session 4: Fire Research and Projects in the SAFNET Region: continued	
14:00 – 16:00	• Overview of fire management in Swaziland (16years) **Swaziland – Wisdom Dlamini** • Use of Earth Observation Technologies in Fire Management in Zimbabwe **Zimbabwe - Ntandokamlimu Nondo** • Fire Modelling Inter-comparison **Sally Archibald – RSA, WITS** • Fire Monitoring that is done in Malawi (Department of Forestry) **Malawi - Ruttia Katiyi** • Fuel curing and fire behaviour on a Highveld grassland **Talfryn Harris – RSA, WITS** • Miombo Network – Update **Judith Kamoto**
15:30 – 16:00	Tea/Coffee Break
16:00 – 17:30	• **Website – Chenay Simms – RSA - SANParks** • **SAFNet Administration**
	• Restoring Traditional Fire Management **Robin Beatty** • **Arrangements for Field Day** Preparations of fieldwork – History and Theory of biomass burning and fire emission fieldwork **Wooster and Govender**
18H30	**Dinner at Skukuza restaurant**

Day 3: Wednesday 18th April	
Session 5: Fire Experiments in the Field	
7:00 – 8:00 – Breakfast at Skukuza restaurant	
8:00 – 13:00	**Depart for field day**
13:00 - 14:00	LUNCH in the field
18:30	Dinner

Appendix 2

Meeting attendance List

Na.	NAME	COUNTRY	E-MAIL ADDRESS
1.	Philip Frost	South Africa	PFROST@csir.co.za
2.	Linda Kleyn	South Africa	LKleyn@csir.co.za
3.	Ruttia Katiyi	Malawi	ruttiakatiyi@yahoo.com
4.	Judith Kamoto	Malawi	judithkamoto@gmail.com
5.	Wisdom M. Dlamini	Swaziland	mwdlamini@gmail.com
7.	Navashni Govender	South Africa	navashni.govender@sanparks.org
9.	Mamisoa Andrianjafy	Madagascar	mamisoa.andrianjafy@mobot-mg.org
10.	Ntandokamlimu Nondo	Zimbabwe	ntando.nondo@gmail.com
11.	Sally Archibald	South Africa	sarchibald@csir.co.za
12.	Talfryn Haris	South Africa	talfrynharris@gmail.com
13.	Aniceto Chauque	Mozambique	achauque2012@gmail.com
14.	Robin Beatty	Mozambique	robin.beatty@gmail.com
15.	Mata Yebra	Australia	marta.yebra@anu.edu.au
17.	Thomas Artes	UK	Tomas.ARTES-VIVANCOS@ec.europa.eu
18.	Anja Hoffmann	Germany	aahoffmann@email.de
19.	Gareth Roberts	USA	G.J.Roberts@soton.ac.uk
20.	Gernot Ruecker	Germany	gruecker@zebris.com
21.	David Roy	USA	David.Roy@sdstate.edu
22.	Luigi Boschetti	USA	luigi@uidaho.edu
25.	Pedro Oliveira	USA	pedro.oliveira@sdstate.edu
23.	Martin Wooster	UK	martin.wooster@kcl.ac.uk
24.	Ronald Vernooij	Netherland	r.vernooij@vu.nl
25.	Tercia Strydom	South Africa	Tercia.Strydom@sanparks.org
26.	Chenay Simms	South Africa	Chenay.simms@sanparks.org
27.	Kekilia Kabalimu	Tanzania	kabalimu@hotmail.com

Appendix 3

Detailed feedback from Groups

Notes from Ms Govender

Group 1:

Q1 – mailing list (who), website (tracker), Social media, Need a dedicated person. Country focal point (but with a fire working group) – to encourage more local and regular meetings and discussions. , students/University.

Q2 – Brazil May 2019 – International Wildland fire Meeting

Q3 – Climate Change/Land degradations (Fire as a driver), Land restoration/Rehab, Nano sat validation, Biomass sampling, Emission work

Q4 – Voluntary but more accountable

Group 2:

Q1 – young and keen to drive the website. Post the fire management plans, post protocols, each one recruit a person, Social media (facebook, whats app, mailing list), Local fire working groups, blog (does require peoples time)

Q2 – Paleofire group, Validating emissions models, Market the sites in other countries, Fuel load database, fire spread modeling , standardize sampling and early and late season fire protocols. Burnt area product with sentinel and landsat – David Roy.

Q3 – knowledge transfer and get involved in Training.

Q4 – Gave both the pros and cons. At least one dedicated person.

Group 3:

Q1 – website. Hosted by GOFC/GOLD (long tern- for sustainability), What and who is SAFNet journal article, African fire assessment, Best practices for using earth observation for fire (case studies), Promotion of fire resources (a one pager about the different fire remote sensing products). .

Q2 – Good fire versus bad fire (ecological view). Contribution of populations, fire extinction model, FMC and fuel characterization. Using citizen science (FMC photo's), active fire detection (agricultural fires), fuel loads. Large spatial scale or more regularly – quality control and incentivize the collector.

Q3 – Good fire/bad fire. Changing fire regimes

Q4 – NGO – requires constant funding, need for dedicated person. Not the best route to follow

Group 4:

Q1 – update the website, social media, (facebook). Need institutions to take responsibility and ownership. Invitation to people or a hello we are alive letter and to update the mailing list.

Q2 – fire behavior, emissions, fuel model for Africa. Combine the African networks to come together to write proposals.

Q3 – horizon 2020, GWIS (funding and validation – or funding an intermediate person to look for the funding and proposals).

Q-4 – Voluntary, would like more structure and to get one person to run the Network

Notes from Dr Archibald

Group 1:

Q1:

- Mailing list, website, social media. (website hosted by GOFC-GOLD – Make a decision)
- Someone to maintain the website
- Country focal point – someone to take initiative at a country level. Local Fire working group nodes (eg MESA) including students

Q2:

- TAFORI, TAWIRI University of Soikoene, Aru University.
- Brazil conference May 2019 – prepare for this Jesus will fund some participation….

Q3: Climate change/land degradation. Fire is the driver. Landscape restoration. Nano-sat validation. Biomass sampling, emission sampling

Q4:

- Lets keep voluntary…. But with some screws tightened here and there. More accountability
- Possible funders (GMES, SASSCAL)

Group 2:

Q1

- Someone young and keen to drive the website (facebook/whatsapp)
- Resources available
  - – people post their fire management plans,
  - people post protocols
- Each person recruit at least one other person (target universities which creates succession of students)
- Create active national focus-groups
- Blog where people answer questions around fire?

Q2

- Currently happening:
- Paleo-fire group…
- Validating emissions models (Guido and Martin)
- Validation of sentinel 3 FRP (Gareth and Martin)
- Landsat/sentinel product validation (David Roy)
- Nice to have:
- Identify all prescribed fire activities across Africa as a resource for researchers
- Fuel load database
- Fire spread modelling….
- Apply some similar experiments and protocols across countries.
- Get involved in training – involve fire fighters, improve understanding of ecological need for fire.
- Funding - ?UK newton grant

Q4:

- Institutional pros (Stable funding, dedicated person, easier to get funding for an INSITUTION rather than individuals)
- Institutional cons (Subject to funders agendas, higher risk)
- Voluntary pros (Freedom, low risk, Potential middle ground is SASSCAL)

Group 4:

Q1:

- Website with contact information. Social media.
- Responsible party (not a person, an organization)
- Invitation letter – reminder about SAFNET. To all members and ask people to resend. What is the value of joining? (do this AFTER updating the website.

Q2:

- New avenues to be explored:
- Fire behavior, fire spread, fuel moisture mapping, fuel models…
- Africa-wide network…. Link regional networks.

Q3: create a new fuel model for AFRICA (each country provide information to create this).

- Funding:
- Horizon 2020
- GWIS to fund a person who can motivate and keep us on track.

Q4:

- Not institutionalized. But middle ground could be still getting funding for an individual

Appendix 4

Participant Questionnaire

Participant Questionnaire

10th Southern African Fire Network (SAFNet) Meeting

Kruger National Park, South African

15th – 19th April 2018

1) Comment on the content of the meeting and provide suggestions to improve the next meeting?

2) What topics should be emphasized at the next meeting?

3) Was the content of the workshop useful to you and how?

4) What is the one take home message from the meeting that you have noted?

5) Comment on the structure of the workshop (group work/presentations)? Which format was most useful to you and why? Do you have any other suggestions?

6) How would YOU and your country like to be involved in the Network?

7) Can you provide the contact details of three other people in your country that will benefit from the meeting and Network?

8) Rate the following aspects of the meeting? List suggestions for improvement?

Venue	___Poor	___Fair __Good__Excellent
Food	___Poor	___Fair __Good__Excellent
Accommodation	___Poor	___Fair __Good__Excellent
Meeting facilities	___Poor	___Fair __Good__Excellent